

PHRASE STRUCTURE RULES OF CHINESE TOPIC CONSTRUCTIONS*

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1. INTRODUCTION: DEPENDENCIES IN TOPIC CONSTRUCTIONS

Topic-prominence has been known as one of the typological features of Chinese. The grammatical configuration with the form of "topic-comment" has been much discussed in Chinese literature (cf. Chao 1968, Li and Thompson 1976, Huang 1982, Liu 1987, Xu and Langendoen 1985). Consider the following structures, which are referred to as typical examples of topic constructions:

- (1) Nei-ke shu, yezi hen da.
That-CLA tree leaves very big
'As for that tree, the leaves are big.'
- (2) Shuiguo, wo zui xihuan xiangjiao.
fruit I most like banana
'As for fruit, I like banana most.'

Each of the sentences in (1) and (2) consists of two parts: the topic, which occurs in the initial position, and the comment, a clause which follows the topic and says something about it. Such topic constructions must be considered as "basic" since they can not be derived from some "more basic" structures (cf. Teng 1974, Li and Thompson 1976, Huang 1982, and Jiang 1989 for discussion). Further, topic constructions may have multiple topics, particularly when they involve extraction (i.e. topicalization). What is interesting about extraction in topic constructions is that it is possible to topicalize an NP as shown in (3a), but not as in (3b).

- (3)a. Shuiguo, xiangjiao_i wo zui xihuan t_i.
fruit banana I most like
'As for fruit, banana, I like ____ most.'
- b. *Xiangjiao_i, shuiguo, wo zui xihuan t_i.
banana fruit I most like
'*Banana, as for fruit, I like ____ most.'

As Huang (1982) notes, in sentences like (3), the gap in the lowest clause is usually construed as bound by the lowest topic, not by any higher one. The same can be observed in

the following sentences:

- (4) [S Zhangsan_i, [S neixi ren_j [S yige_k [S ta dou bu renshi t_{*i/*j/k}]]]]
 those man one he all not know
 'Zhangsan, of those men, not even one, he knows ____'
- (5) [S Zhangsan_i [S ta xiangxin [S neixie shu_j [S mei yiben_k [S Lisi
 he believe those book every one
 dou zhidao t_{*i/*j/k}]]]]]
 all know
 'Zhangsan believe that of those books, every one Lisi knows ____.'

These constructions are accounted for in Huang (1982) in terms of the Subjacency Condition (Chomsky 1981), assuming that topic constructions have a structure roughly like the following, where the Comp is dominated by S' and topics are represented by Chomsky-adjunction to S nodes occurring to the right of the Comp.

- (6) [S' comp [S top [S top [S ... t ...]]]]

Further assuming that Move-*a* is a successive-cyclic Comp-to-Comp movement and S is a bounding node in Chinese, it is expected that the gap in the lowest clause can only be construed as bound by the lowest topic in accordance with the Subjacency condition.

However, as Liu (1987) shows, sentences with the indices indicated as in (7) and (8) are also possible in Chinese, where the gap in the lowest clause can be construed as bound by the topic in a higher position and the antecedent-gap dependency crosses two S nodes in any sense.

- (7) [S Lisi_i, [S Zhangsan_j [S ta_j bu xihuan t_i]]]
 he not like
 'As for Zhangsan, Lisi, he doesn't like ____.'
- (8) [S Neige ren_i [S Zhangsan shuo [S Lisi_j [S ta_j bu xihuan t_i]]]]]
 that men say he not like
 'That man, Zhangsan says that Lisi, he doesn't like ____.'

The grammaticality of (7) and (8) clearly shows the inadequacy of Huang's analysis. While maintaining the Subjacency point of view, Liu offers an alternative analysis, proposing that topicalization undergoes Top-to-Top movement instead of Comp-to-Comp movement and the Top node is introduced by the rules in (9).

- (9) a. S" ----> TOP, S" (or S')
 b. S' ----> COMP, S

Thus, for multi-topic constructions, relevant structures are roughly like the one in (10), where the topic is constructed to the left of the Comp.

(10) [S"₁ top [S"₂ top [S' comp [S ... t ...]]]

Following May (1985), Liu further assumes that S"₁ and S"₂ in (10) constitute a projection set, which counts as one category. In other words, S"₁ and S"₂ are considered simply as two segments of this category. An empty category is bound within a category of multiple segments if it is bound within a segment of the category. Thus, deeply embedded gap can be bound by the matrix topic in sentences like (7) and (8) through the trace in an intermediate Top node. The structure for (8), for example, looks like (11)

(11) Neige ren_i [S Zhangsan shuo [S" t_i [S" Lisi_j [S ta_j bu xihuan t_i]]]]
 that men say he not like
 'That man, Zhangsan says that Lisi, he doesn't like ____.'

Liu's proposal does provide explanations for the grammaticality of cross-topic binding in sentences like (7) and (8); however, it leaves the fact unexplained that in constructions like (3)-(5) the gap can only be construed as bound by the lowest topic but not by any one in a higher position, since the analysis predicts that topics are not island-creating and a deeply embedded gap can always be linked to a long-distance antecedent through the trace in an intermediate Top node.

In the framework defined in Gazdar et al. (1985) ---- hence GKPS, this paper argues that two types of topic constructions should be recognized, and these two types of constructions allow different patterns of structural dependencies due to the interaction of relevant phrase structure rules and general grammatical principles.

2. PHRASE STRUCTURES OF TOPIC CONSTRUCTIONS

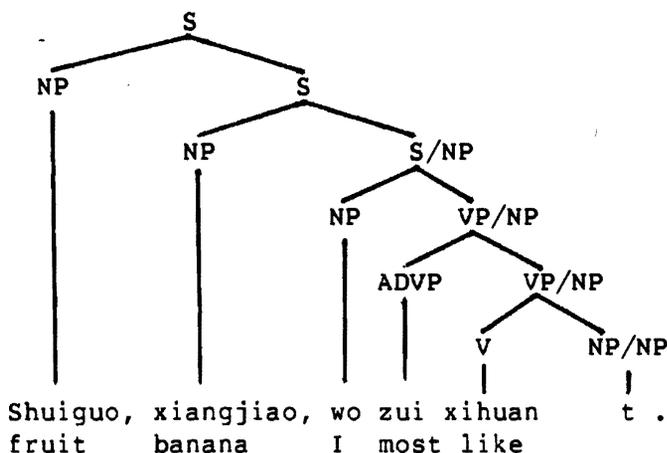
There is an important difference between sentences like (3)-(5) and those like (7)-(8). In general, when a resumptive pronoun is involved in a sentence as shown in (7)-(8), cross-topic binding is possible, whereas such binding is impossible if no (resumptive) pronoun is involved, as shown in (3)-(5). In view of these facts, I propose that the difference is due to the effects of different Immediate Dominance (ID) rules and the following three ID rules are responsible for Chinese topic constructions:

(12) a. S ----> NP, S
 b. S ----> NP, S/NP
 c. S ----> NP, S[RESUM NP]

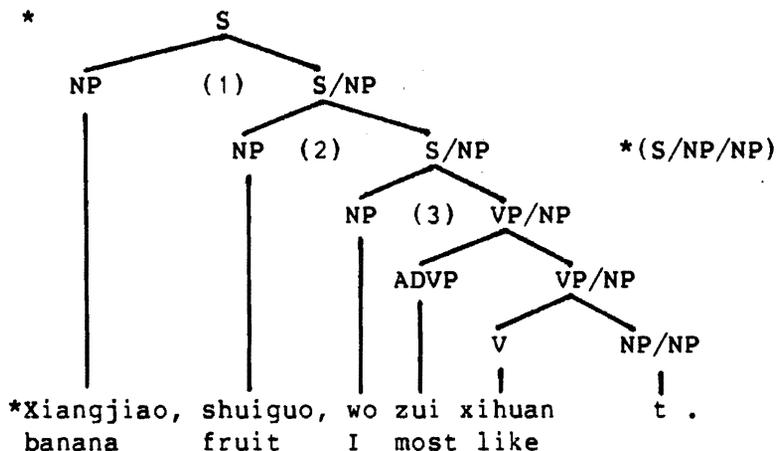
(12a) is the general rule responsible for introducing Chinese topic constructions, such as those in (1) and (2). (12b) is responsible for topic constructions involving unbounded dependencies (i.e. topicalization). (12c) says that a sentence can consist of a topic followed by a sentence containing a resumptive pronoun. Here RESUM is treated as a category-valued Foot feature. The Foot Feature Principle (FFP) will require RESUM to percolate to be associated with a (resumptive) pronoun which agrees with the topic in features such as person and number.[1]

Given the rules in (12) above, (3a) and (3b) will be assigned structures respectively as in (13a) and (13b).

(13) a.



b. *



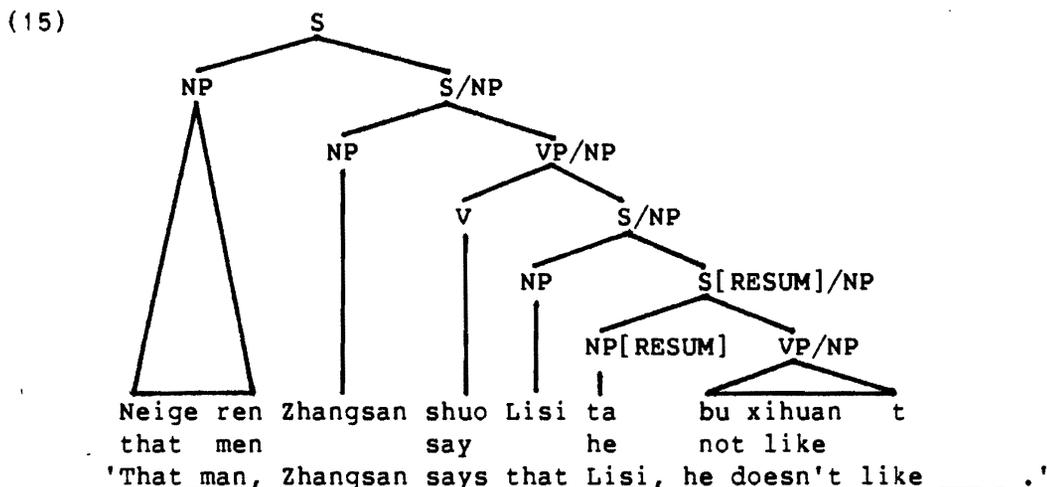
The central issue here concerns (13b). Structures like (13b) are ill-formed only when the gap is associated with the first topic instead of the second. Intuitively, for sentences like (3), native speakers would associate the gap with the second topic, not the first. This amounts to saying that the grammar does not allow SLASH to percolate up beyond the lowest S node and to be instantiated on a higher S node in the present case. The analysis of extraction from a topic construction like (13b) can be accommodated by a universal principle, namely, the Proper Inclusion Principle, which reads roughly as follows (cf. Sanders 1974, Pullum 1979):

(14) Proper Inclusion Principle:

For any representation, that satisfies the structural descriptions of both rule A and rule B, rule A applies instead of the application of rule B if and only if the structural description of rule A properly includes the structural description of rule B.

Referring to the present case, this principle has the effect that when two rules A and B seem to license a local tree, rule A applies instead of B if the structural description of A properly includes that of B. Thus, when SLASH occurs on the daughter node of the second local tree in (13), rule (12b) applies instead of (12a) since the structural description of (12b) properly includes that of (12a), plus an additional Slash feature specification. Thus, the Slash category on the daughter S node in this local tree is introduced by the ID rule $S \rightarrow NP, S/NP$. The problem for (13b) is that if the instantiated SLASH on the mother S node in the second local tree is also instantiated on the daughter S/NP node in accordance with the FFP, a multiple Slash category like S/NP/NP would be created. Such a composition of a category is impossible because multiple Slash categories are prohibited by the grammar, as defined in GKPS.[2] Adopting this restriction in the tree construction, the structure has an apparent violation of the FFP, since in the second local tree of (13b), SLASH on the mother node is instantiated but SLASH on the daughter node is inherited.

On the other hand, multi-topic constructions involving resumptive pronouns have different structures. In view of the rule in (12c), the structure for (8), for example, is like that in (15).[3]



This structure satisfies the FFP, for nothing in this case prevents SLASH percolating beyond the lowest S node. The Proper Inclusion Principle is irrelevant in this case, since with respect to the two rules, (12b) and (12c), the structural description of neither one properly includes that of the other. Further, there is no corresponding ID rule in the grammar which contains an inherited SLASH on the daughter node and whose structur-

al description properly includes that of the rule $S \rightarrow NP, S[RESUM NP]$. Thus, the grammar accounts for the contrast between (13a) and (13b), while allowing cross-topic binding in structures like (15).

3. FURTHER DISCUSSION: EVIDENCE AND MOTIVATION

The preceding section assumes phrase structure rules for the topic constructions without showing much evidence and attributes the different dependency phenomena to the effects of different phrase structure rules. In fact, there are quite a few pieces of evidence supporting this point of view. As mentioned in section 1, gapless topic constructions like (1) and (2) are basic in Chinese. It is plausible to assume that there is a rule like (12a) in the grammar.[4] Thus, the following discussion will focus on the rules in (12b) and (12c).

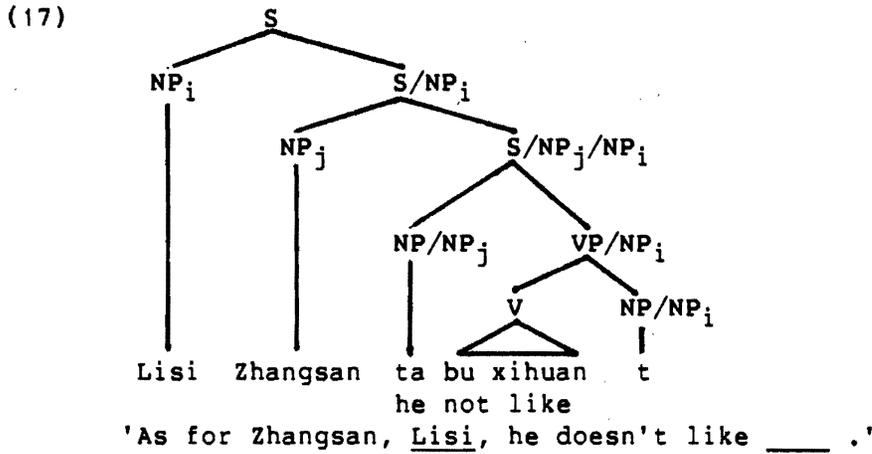
Gazdar (1981) suggests that the Foot feature SLASH can refer to resumptive pronouns as well as phonologically null categories. Maling and Zaenen (1982) propose that resumptive pronouns should be treated as being of the same syntactic type as empty categories. In languages such as Scandinavian languages, it seems plausible to claim that there is no overwhelming reason to assume that resumptive pronouns are syntactically different from empty categories; but there are reasons for assuming that resumptive pronouns and empty categories are syntactically different in Chinese.

As has long been observed, there are a set of sentence positions in which it is possible for resumptive pronouns to occur but impossible for empty categories, as shown by the contrast between the following sentences:

- (16) a. Zhangsan_i, wo hen xihuan [ta_i chang ge de shengyin].
 I very like he sing song DE voice
 'Zhangsan_i, I like very much the voice with which he_i sings.'
- b.*Zhangsan_i, wo hen xihuan [t_i chang ge de shengyin].
 I very like sing song DE voice
 *'Zhangsan_i, I like very much the voice with which (e_i) sings.'

This indicates that resumptive pronouns and empty categories are different in terms of distribution.

Supposing that the Foot feature SLASH is used to encode the information of both empty categories and resumptive pronouns, multiple Slash categories would have to be allowed in the structure for a sentence like (7) as shown in (17) below:



As a result, this would predict that crossed dependencies (or nested dependencies) should be allowed in Chinese. However, there is evidence showing that crossed dependencies are ungrammatical, especially when only empty categories are involved. In general, when the antecedent-gap dependencies are arranged serially, the sentence is grammatical; but if multi-topic sentences are constructed with nested or crossed dependencies, the grammaticality of such sentences would be greatly diminished, even though they might be sometimes, as Xu and Langendoen (1985) note, not fully unacceptable. Structures with serial, nested, and crossed dependencies can be shown by the examples in (18), (19) and (20) respectively.

- (18) Zhangsan_i, wo yiwei t_i yijing gaosu ni neiben shu_j Lisi
I think already tell you that book
bu xihuan t_j.
not like
'Zhangsan_i, I thought _____i told you already that the book_j Lisi
didn't like _____j.'
- (19) *Neiben shu_i, Zhangsan_j wo yiwei t_j yijing gaosu ni Lisi
that book I think already tell you
bu xihuan t_i.
not like
*'That book'_i, Zhangsan_j I thought _____j told you already that Lisi
didn't like _____i.'
- (20) *Zhangsan_i, Neiben shu_j wo yiwei t_i yijing gaosu ni Lisi
that book I think already tell you
bu xihuan t_j.
not like
*'Zhangsan'_i that book_j I though _____i told you already that Lisi
didn't like _____j.'

Obviously, the structural difference between (18) and (19) or (20) is that structures with crossed dependencies (or nested dependencies) require multiple Slash categories. These examples suggest that it is generally correct to prohibit multiple Slash categories in the grammar.[5] Thus, crossed dependencies are well-formed only when the dependencies to empty categories and that to resumptive pronouns cross each other. One possibility of handling this situation is to mark Slash specifications for empty categories and those for resumptive pronouns respectively. But this in effect amounts to treating empty categories and resumptive pronouns in two separate features.

The strongest argument for a Slash-category representation of resumptive pronouns so far suggested in the literature comes from coordination constructions. It is widely assumed that coordination is possible only between constituents of exactly the same syntactic type. There are data which seem to suggest that resumptive pronouns and empty categories are of same syntactic type, as shown by the following Hebrew example:

- (21) ha'is se rina baxra ___ ve ohevet oto
 the-man that Rina chose ___ and loves him

If resumptive pronouns are not of the same syntactic type as empty categories, then coordination between constituents containing empty categories and those containing resumptive pronouns should not be possible.

However, other coordination constructions provide equally strong evidence against a Slash-category analysis of resumptive pronouns. The following example is also from Hebrew:

- (22) ha'is se rina ohevet oto ve et dani
 the-man that Rina loves him and Dani

In (22), a resumptive pronoun coordinates with a lexical NP. By the same reasoning, resumptive pronouns should be of the same syntactic type as lexical NPs. It has been reported in the literature that parallel phenomena can also be observed from other languages.[6] In fact, coordination is rather complex. Though coordination has been widely used to test constituency structure, it is not difficult to find coordination between constituents of different syntactic types, such as:

- (23) a. John is at home and happy now.
 b. John walked slowly and with great care.

In (23a), a PP coordinates with an AP; In (23b) an ADVP coordinates with a PP. In view of all these facts, coordination constructions have not provided any compelling arguments for a Slash-category analysis of resumptive pronouns.

used here merely for simple disposition. Also the rule (12b) is simply a case of the general rule $S \rightarrow XP, S/XP$.

- [5] In Chinese, some constructions with multiple Slash categories may not be fully unacceptable to some speakers. Such constructions, I believe, are allowed in quite a limited domain and their interpretation needs strong contextual information.
- [6] The two Hebrew examples are taken from Sells (1984, p. 324). It is difficult to test Chinese in this regard since it is generally difficult for Chinese coordination to involve resumptive pronouns and other categories (including empty categories). Interested readers are referred to McCloskey (1979), Schachter (1981), and Sells (1984) for related data and discussion of other languages.
- [7] In each of the two sentences, it is also possible for the resumptive pronoun to be coindexed with the initial topic, and then the empty category will be understood as being coindexed with the second topic. But it is impossible that the resumptive is understood as being coindexed with an NP other than a topic.

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